

Table 18.13 from (1987AJ02): Energy levels of ^{18}F ^a

E_x (MeV \pm keV)	$J^\pi; T$	K^π	τ or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
0	$1^+; 0$	0^+	$\tau_{1/2} = 109.77 \pm 0.05$ min	β^+	1, 4, 5, 6, 9, 10, 12, 13, 15, 21, 23, 24, 25, 29, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42
0.93720 ± 0.06	$3^+; 0$	0^+	$\tau_m = 67.6 \pm 2.5$ psec $g = +0.56 \pm 0.05$	γ	2, 6, 9, 10, 13, 21, 23, 25, 30, 34, 35, 37, 38, 39, 40, 42
1.04155 ± 0.08	$0^+; 1$		2.55 ± 0.45 fsec	γ	6, 9, 21, 25, 30, 33, 34, 36, 37, 38, 40, 41
1.08054 ± 0.12	$0^-; 0$	0^-	27.5 ± 1.9 fsec	γ	6, 9, 10, 21, 25, 34, 36, 37, 38, 39, 40, 42
1.12136 ± 0.15	$5^+; 0$	0^+	234 ± 10 nsec $\mu = +2.86 \pm 0.03$ nm $Q = 0.13 \pm 0.036$ b	γ	5, 6, 9, 10, 13, 14, 21, 22, 25, 30, 31, 34, 36, 38, 40, 42
1.70081 ± 0.18	$1^+; 0$	1^+	955 ± 27 fsec	γ	6, 10, 21, 25, 33, 34, 38, 40, 41, 42
2.10061 ± 0.10	$2^-; 0$	0^-	5.1 ± 0.5 psec	γ	6, 10, 13, 21, 23, 25, 34, 38, 40, 42
2.52335 ± 0.18	$2^+; 0$	1^+	590 ± 24 fsec	γ	6, 10, 21, 25, 30, 38, 40
3.06184 ± 0.18	$2^+; 1$		< 1.2 fsec	γ	6, 21, 25, 30, 34, 37, 38, 40, 41
3.13387 ± 0.15	$1^-; 0$	1^-	0.39 ± 0.02 psec	γ	6, 10, 21, 25, 34, 37, 38, 40
3.3582 ± 1.0	$3^+; 0$	1^+	0.44 ± 0.03 psec	γ	6, 10, 21, 34, 38, 40, 42
3.72419 ± 0.22	$1^+; 0$		$2.7_{-2.7}^{+4.1}$ fsec	γ	6, 10, 21, 23, 25, 33, 34, 38, 40, 42
3.79149 ± 0.22	$3^-; 0$	1^-	1.91 ± 0.13 psec	γ	5, 10, 21, 23, 25, 34, 38, 40, 42
3.83917 ± 0.22	$2^+; 0$		19.0 ± 2.7 fsec	γ	6, 10, 21, 23, 25, 30, 34, 38, 40, 42
4.11590 ± 0.25	$3^+; 0$		91 ± 22 fsec	γ	6, 10, 21, 23, 25, 30, 34, 38, 40, 42
4.2258 ± 0.7	$2^-; 0$	(1^-)	110 ± 15 fsec	γ	6, 10, 21, 23, 34, 38, 40, 42
4.36015 ± 0.26	$1^+; 0$		27 ± 10 fsec	γ	10, 21, 25, 33, 34, 38, 40, 42
4.3981 ± 0.7	$4^-; 0$	0^-	58 ± 12 fsec	γ	6, 10, 13, 14, 21, 34, 38, 40, 42

Table 18.13 from (1987AJ02): Energy levels of ^{18}F ^a (continued)

E_x (MeV \pm keV)	$J^\pi; T$	K^π	τ or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
4.652 \pm 2	4 ⁺ ; 1		< 10 fsec	γ	6, 21, 24, 30, 34, 38, 40
4.753 \pm 3	0 ⁺ ; 1			γ	21, 34, 37, 38, 40, 42
4.8483 \pm 0.5	5 ⁻ ; 0	1 ⁻	5.2 \pm 0.9 psec	γ	5, 23
4.860 \pm 2	1 ⁻ ; 0		66 \pm 18 fsec	γ, α	6, 21, 38, 40, 42
4.9636 \pm 0.8	2 ⁺ ; 1		< 4 fsec	γ	6, 21, 30, 38, 40
5.2976 \pm 1.5	4 ⁺ ; 0	1 ⁺	30 \pm 5 fsec	γ, α	6, 9, 10, 11, 21, 38, 40
5.502 \pm 2	3 ⁽⁻⁾ ; 0		63 \pm 25 fsec	γ, α	6, 10, 21, 38, 40
5.60338 \pm 0.27	1 ⁺		15 \pm 10 fsec	γ, α	6, 8, 25, 38, 40, 42
5.60486 \pm 0.28	1 ⁻ ; 0 + 1		$\Gamma < 1.2$ keV	γ, α	6, 8, 10, 21, 25, 38, 40, 42
5.673 \pm 2	1 ⁻ ; 0 + 1		< 0.8	γ, α	6, 8, 10, 21, 25, 38, 40, 42
5.786 \pm 2.4	2 ⁻ ; 0		$\tau_m = 15 \pm 10$ fsec	γ, α	6, 21, 38, 40, 42
6.0964 \pm 1.1	4 ⁻ ; 0	1 ⁻	$\Gamma = 0.24 \pm 0.03$	γ, p, α	6, 10, 21, 25, 29, 38, 40, 42
6.108 \pm 3	(1 ⁺); 0		0.034 \pm 0.003	γ, p, α	6, 8, 21, 23, 29, 40, 42
6.13647 \pm 0.33	0 ⁺ ; 1		≤ 1	γ, p	21, 25, 27, 40, 42
6.1632 \pm 0.9	3 ⁺ ; 1		14 \pm 0.5	γ, p, α	21, 25, 27, 29, 42
6.2404 \pm 0.8	3 ⁻ ; 0 + 1		0.19 \pm 0.03	γ, p, α	6, 21, 25, 27, 29, 40
6.242 \pm 3	3 ⁻ ; 0 + 1		0.18 \pm 0.04	γ, p, α	6, 8, 21, 25, 29, 40
6.262 \pm 2.5	1 ⁺ ; 0		0.60 \pm 0.12	γ, p, α	6, 8, 10, 21, 29, 33, 40
6.2832 \pm 0.9	2 ⁺ ; 1		10.0 \pm 0.5	γ, p, α	21, 25, 27, 29
6.3105 \pm 0.8	3 ⁺ ; 0		0.95 \pm 0.14	γ, p, α	6, 21, 25, 27, 29, 42
6.3855 \pm 1.7	2 ⁺ ; 0 + 1		0.49 \pm 0.09	γ, p, α	6, 21, 25, 29, 40
6.4849 \pm 1.5	3 ⁺ ; 0		0.40 \pm 0.10	γ, p, α	6, 21, 25, 29, 40, 42
6.5670 \pm 1.5	5 ⁺ ; 0	1 ⁺	0.56 \pm 0.13	γ, p, α	6, 8, 9, 10, 11, 21, 29, 40
6.633 \pm 10	1		80 \pm 2	p, α	29, 40
6.6437 \pm 0.8	2 ⁻ ; 1		0.60 \pm 0.07	γ, p, α	6, 7, 21, 25, 29
6.647 \pm 4	1 ⁻		91 \pm 4	p, α	8, 10, 29
6.777 \pm 1.4	4 ⁺ ; 0		9.2 \pm 1.0	γ, p, α	21, 25, 27, 29, 40
6.8031 \pm 1.5	1 ⁺ , 2, 3 ⁺ ; 0		≤ 2	γ, p	10, 21, 25, 27, 40
6.809 \pm 5	2 ⁻		88 \pm 2	p, α	7, 8, 29
6.811	(2 ⁺)		3.0 \pm 0.5	p, α	29
6.857 \pm 10	(3 ⁻)		5.0 \pm 1.0	p, α	29, 40
6.8774 \pm 1.7	3, 4 ⁻ ; 0		≤ 2	γ, p, α	21, 25, 29
7.201 \pm 2	(4 ⁺); 0		6.5	p, α	8, 29, 40
7.247 \pm 2	(1 ⁺); 0		46.5	p, α	8, 29

Table 18.13 from (1987AJ02): Energy levels of ^{18}F ^a (continued)

E_x (MeV \pm keV)	$J^\pi; T$	K^π	τ or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
7.291 \pm 2	3 ⁻		38	p, α	7, 8, 27, 29
7.315 \pm 4	(3 ⁻ ; 0)		52	p, α	29, 40
7.336 \pm 2	1 ⁻ ; 1		16 \pm 2	γ , p	25, 27
7.406 \pm 2	1 ⁺		14.6 \pm 1.4	p	27
7.447 \pm 10			140	p, α	29
7.454 \pm 2	1 ⁻		6	p	27
7.478 \pm 2	(2)		12 \pm 3	γ , p, α	25, 27, 29
(7.485 \pm 2)	(1 ⁻)		32	p	27
7.506 \pm 2	4 ⁻		12 \pm 2	p, α	27, 29
7.513 \pm 2			< 4	γ , p	25
7.528 \pm 2	2 ⁻ ; 1		16.5 \pm 3.0	γ , p, α	25, 27, 29
7.532 \pm 5			75	p, α	27, 29
7.555 \pm 2	(1 ⁻)		30	p	27
7.584 \pm 2			9 \pm 2	γ , p, α	25, 27, 29
7.685 \pm 2	3 ⁺ , 4 ⁺		36 \pm 4	p, α	27, 29
7.729 \pm 4	\geq 1		66 \pm 5	p, α	27, 29
7.763 \pm 4			70	p	27
7.878 \pm 3	\geq 2		20	p, α	27, 29
7.899 \pm 2	(2 ⁻)		38	p, α	7, 8, 29
7.941 \pm 12	(1 ⁺)		112	p, α	7, 8, 29
8.064 \pm 6	\geq 4		60	p, α	27, 29
8.115 \pm 8			96	p	27
8.209 \pm 2	2 ⁻		52	p, α	27, 29
8.238 \pm 2	4 ⁺		20	p	27
9.207 \pm 15 ^b	3, 4 ⁻ ; 0			p, d, α	16, 17, 18
9.50	2, 3 ⁺ ; 0			n, d, α	16, 18
9.58 \pm 20 ^c	6 ⁺	1 ⁺		d, α	9, 10, 11, 22
10.58 \pm 50					11
11.22 \pm 30	7 ⁺	1 ⁺		d, α	9, 10, 11, 22
13.83	4 ⁻ , 5 ⁺		60	d, α	18
14.02	4 ⁻ , 5 ⁺		60	d, α	18
14.10	4 ⁻ , 5 ⁺		60	d, α	18
14.18 \pm 40	(8 ⁺)	(1 ⁺)		d, α	9, 10, 11
15.09	4 ⁻ , 5 ⁺			d, α	18
15.34	5 ⁺ , 6 ⁻			d, α	18
15.79 \pm 100					11
16.07	4 ⁻ , 5 ⁺		220	d, α	18
16.72	4 ⁻ , 5 ⁺		60	d, α	18

Table 18.13 from (1987AJ02): Energy levels of ^{18}F ^a (continued)

E_x (MeV \pm keV)	$J^\pi; T$	K^π	τ or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
17.43	$4^-, 5^+, 6^-$		70	d, α	18
18.62 ± 120					11
(19.00 ± 150)			(500 ± 150)	$\gamma, ^3\text{He}$	12
20.1 ± 200	$(2^-; 1)$		1600 ± 100	$\gamma, ^3\text{He}$	12
22.7 ± 200	$(2^-; 1)$		1200 ± 100	$\gamma, ^3\text{He}$	12
(24.1 ± 200)			(1400 ± 300)	$\gamma, ^3\text{He}$	12

^a See also [Table 18.14](#) for radiative transitions and [18.15](#) for τ_m .

^b Uncertainty estimated by reviewer.

^c For other states with $E_x < 9.6$ MeV see footnote (e) in [Table 18.17 of \(1978AJ03\)](#) and [Table 18.16](#) here. For other states with $10.0 < E_x < 19.6$ MeV see [Table 18.16](#) here, and [Tables 18.14 and 18.16 in \(1978AJ03\)](#). These two tables in [\(1978AJ03\)](#) display the states deduced from the yields of the isospin-forbidden α_1 groups in $^{14}\text{N} + \alpha$ and $^{16}\text{O} + \text{d}$, respectively. [\(1976CH24\)](#) reports 151 isospin mixed natural-parity states with $10.4 < E_x < 17.5$ MeV [$^{14}\text{N}(\alpha, \alpha_1)$] and [\(1973JO13\)](#) reports 138 such states with $9.2 < E_x < 19.4$ MeV [$^{16}\text{O}(\text{d}, \alpha_1)$] of which 16 have $E_x > 17.5$ MeV. In the region $10.4 < E_x < 20.8$ MeV some 167 states with mixed isospin and natural parity have been reported. See also [reaction 29](#).